

## 4.0 AOC 5 - OLD CHEMICAL DEMONSTRATION AREA

### 4.1 LOCATION OF STUDY AREA

The Old Chemical Demonstration Area comprises approximately 64 acres within the Cantonment Area at the Fort McClellan, Alabama Army Installation (Fig. 1). The study area boundary was devised by adding a 150-ft buffer outside of the Old Chemical Demonstration Area site boundary.

### 4.2 AERIAL PHOTOGRAPH QUALITY ISSUES

A few photograph quality issues were encountered during photograph interpretation. They were corrected as follows:

- X **Quality** - In many areas of the photographs, the dynamic range of brightness values was insufficient to distinguish land cover classes. Due to extreme brightness (almost white), ground cover such as grass, bare soil, trails, and roads could not be differentiated. Where appropriate, problem areas of the photographs were subset and image enhancement techniques were applied. Simple adjustments to the brightness and contrast were conducted, or in more severe cases, a histogram equalization in the range of the lookup table was performed on the specific area where interpretation was difficult.
- X **Rectification** - Although second- and third-order transformations were used in the rectification of the digital photographs, all of the photograph rectification within the Old Chemical Demonstration Area contained too much error to accurately digitize land use/cover polygons. The primary factor contributing to the error was terrain distortion. Factors contributing to the error included: (1) insufficient ground control points (GCPs) due to pronounced changes in land cover between years, (2) photographic distortion (location of the site in relation to the center of the photograph and the angle of the camera/aircraft when the photograph was acquired), and (3) terrain distortion. To improve the photographic registration of the study area, the Old Chemical Demonstration Area was subset from the rectified digital photographs in question and the newly-created image files were rectified separately. In many cases, the subsets had to be rubbersheeted to allow for accurate digitization of land use and land cover vectors.

### 4.3 FINDINGS

Complete photographic coverage of the study area was available for eight years of photographic coverage from 1937 to 1994. A total of 339 anomalies were identified in the year-by-year land cover analysis. All anomalies were inspected to ascertain the cause of each anomaly (Fig 2). All anomalies were resolved except for two groups of unidentified objects. Anomalies potentially associated with waste disposal or chemical training activities were determined to be of potential concern and should be assessed by the USAESCH. During the final quality assurance review of the land use/cover anomalies, nine anomalies were determined to be caused by photographic interpretation error. These anomalies are identified as "QA" in Table 1 and will not be discussed further. Of the anomalies identified, 257 were caused by new roads, pre-existing and former roads and trails, trails connecting roads or leading to an excavation area, pre-existing and former excavation areas, buildings, parking lots, landscaping, pre-existing and former groups of unidentified objects, cleared areas associated

with construction of roads or road shoulders, and pre-existing and former cleared areas. The remaining 73 anomalies are of potential concern and were the result of trails, groups of unidentified objects, excavation, and the clearing of trees, scrub, and/or other groundcover.

**1937.** Five anomalous areas were identified during a visual inspection of the photographs (see Table 1 and Fig. 3a). One anomaly was the result of a building. The remaining four anomalies are of potential concern and were the result of cleared areas (3 anomalies) and a trail (1 anomaly).

**1937 to 1940.** Eight anomalies were identified during the land cover change analysis for the years 1937 and 1940 (see Table 1 and Fig. 3b). Three anomalies were the result of new and pre-existing roads and a pre-existing trail. The remaining five anomalies are of potential concern and were the result of trails (5 anomalies).

**1940 to 1944.** Forty-two anomalies were identified during the land cover analysis for the years 1940 and 1944 (see Table 1 and Fig. 3c). Fifteen of the anomalies were the result of new and pre-existing roads, pre-existing and former trails, former cleared areas, and cleared areas associated with road construction. The remaining twenty-seven anomalies are of potential of concern and were the result of new trails (4 anomalies), areas of trails and clearings (6 anomalies), the clearing of trees (8 anomalies) and other cleared areas (9 anomalies).

**1944 to 1954.** Seventy-two anomalies were identified during the land cover change analysis for the years 1944 and 1954 (see Table 1 and Fig. 3d). Fifty-eight of the anomalies were the result of new roads, former and pre-existing trails, trails leading to an excavation site, buildings, pre-existing cleared areas, cleared areas associated with road construction or road shoulders, and former areas of trails and clearings. The remaining fourteen anomalies are of potential concern and were the result of trails (2 anomalies), excavation (4 anomalies), groups of unidentified objects (2 anomalies), the clearing of trees (5 anomalies), and the clearing of scrub (1 anomaly).

**1954 to 1961.** Fifty-nine anomalies were identified during the land cover change analysis for the years 1954 and 1961 (see Table 1 and Fig. 3e). Forty-three of the anomalies were the result of new, pre-existing and former roads, pre-existing and former trails, trails connecting roads or leading to an excavation site, former groups of unidentified objects, new and former buildings, pre-existing and former cleared areas, and pre-existing excavation. The remaining sixteen anomalies are of potential concern and were the result of trails (5 anomalies), the clearing of scrub (4 anomalies), and excavation (7 anomalies).

**1961 to 1969.** Twenty-four anomalies were identified during the land cover change analysis for the years 1961 and 1969 (see Table 1 and Fig. 3f). Eighteen of the anomalies were the result of pre-existing and former roads, trails, excavation, and cleared areas. The remaining six anomalies are of potential concern and were the result of trails (2 anomalies) and excavation (4 anomalies).

**1969 to 1982.** Eighty-four anomalies were identified during the land cover change analysis for the years 1969 and 1982 (see Table 1 and Fig. 3g). All of the anomalies were the result of new, pre-existing, and former roads; former trails; tree and scrub clearing associated with the construction of a community center; landscaping; parking lots; industrial and recreation buildings; and former and pre-existing excavations. There are no anomalies of potential concern.

Figure 1



Fig 2



**1982 to 1994.** Thirty-six anomalies were identified during the land cover change analysis for the years 1982 and 1994 (see Table 1 and Fig. 3h). Thirty-five anomalies were the result of new, pre-existing, and former roads; new, pre-existing and former landscaping; new and pre-existing parking lots; pre-existing buildings; and former and pre-existing excavation. The remaining one anomaly is of potential concern and was the result of a cleared area (1 anomaly).

**Table 1. The Old Chemical Demonstration Area - Anomaly Resolution**

<b>Of Potential Concern?</b>	<b>Anomaly #</b>	<b>Year of Change</b>	<b>Discussion</b>	<b>Related Anomalies<sup>1</sup></b>
Yes	1	1937	Cleared area	6, 14
Yes	2	1937	Cleared area	None
	3	1937	Road	8, 17, 31, 32, 72, 146, 190, 214, 304
Yes	4	1937	Trail	9, 30, 76, 77
Yes	5	1937	Cleared area	None
Yes	6	1940	Trail (cuts through former cleared area visible 1937)	1, 14, 57, 58
Yes	7	1940	Trail	22, 27
	8	1940	Pre-existing road (first visible 1937)	3, 17, 31, 32, 72, 146, 190, 214, 304
	9	1940	Pre-existing trail (first visible 1937)	4, 30, 76, 77
Yes	10	1940	Trail	40
Yes	11	1940	Trail	43
Yes	12	1940	Trail	41
	13	1940	Road	44
	14	1944	Pre-existing trail (first visible 1940)	1, 6, 57, 58
Yes	15	1944	Trail	59, 60, 140, 190, 214, 304
Yes	16	1944	Cleared area	65
	17	1944	Pre-existing road (first visible 1937)	3, 8, 31, 32, 72, 146, 190, 214, 304
	18	1944	Cleared area (associated with road construction road)	71
	19	1944	Cleared area (associated with widening/construction of road - first visible 1937)	73
Yes	20	1944	Cleared area	70
Yes	21	1944	Cleared area	71
Yes	22	1944	Cleared area (former trail - first visible 1940)	7
	23	1944	Road	72, 146, 190, 214, 304

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	24	1944	Road	72, 146, 190, 214, 304
	25	1944	Road	72, 146, 190, 214, 304
Yes	26	1944	Cleared area	74
Yes	27	1944	Cleared area (former trail - first visible 1940)	7, 73, 74
Yes	28	1944	Cleared area	73
Yes	29	1944	Cleared area	73-75
	30	1944	Pre-existing trail (first visible 1937)	4, 9, 76, 77
	31	1944	Road (widened)	3, 8, 17, 32, 72, 146, 190, 214, 304
	32	1944	Pre-existing road (first visible 1937); incorrectly coded as grass	3, 8, 17, 31, 72, 146, 190, 214, 304
Yes	33	1944	Trail	62, 64, 140, 190, 214, 304
Yes	34	1944	Trees cleared	None
Yes	35	1944	Trees cleared	None
Yes	36	1944	Area of trails and clearings	126
Yes	37	1944	Area of trails and clearings	127
Yes	38	1944	Area of trails and clearings	84, 127
Yes	39	1944	Area of trails and clearings	83
	40	1944	Former trail (first visible 1940)	10
	41	1944	Former trail (first visible 1940); incorrectly coded as pre-existing trail	12
	42	1944	QA	
	43	1944	Former trail (first visible 1940)	11
	44	1944	Former road (first visible 1940)	13
	45	1944	Cleared area (associated with road construction)	93, 167, 202
Yes	46	1944	Cleared area	94, 166, 168, 203, 295
Yes	47	1944	Trees cleared	None
Yes	48	1944	Trail	108, 109, 170
Yes	49	1944	Trail	111, 112, 114, 115, 118, 182
Yes	50	1944	Trees cleared	None
Yes	51	1944	Trees cleared	None



Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
Yes	52	1944	Trees cleared	None
Yes	53	1944	Trees cleared	103, 158, 163, 172, 206, 274, 281, 332
Yes	54	1944	Trees cleared	None
Yes	55	1944	Area of trails and clearings	None
Yes	56	1944	Area of trails and clearings	83, 84, 87, 124, 125, 127
	57	1954	Former trail (first visible 1940)	6, 14
	58	1954	Former trail (first visible 1940)	6, 14
	59	1954	Former trail (first visible 1944)	15
	60	1954	Road (trail in 1944)	15, 140, 190, 214, 304
	61	1954	Road	140, 190, 214, 304
	62	1954	Former trail (first visible 1944)	33
Yes	63	1954	Vegetation cleared (scrub partially cleared away)	None
	64	1954	Road (trail in 1944)	33, 140, 190, 214, 304
	65	1954	Former cleared area (first visible 1944)	16
	66	1954	Road	140, 190, 214, 304
	67	1954	Road	140, 190, 214, 304
	68	1954	Road	140, 143, 190, 214, 304
	69	1954	Trail (extends across area of pre-existing trails and clearings); connects two roads	131, 191
	70	1954	Former cleared area (first visible 1944)	20
	71	1954	Former cleared area (first visible 1944)	18, 21
	72	1954	Pre-existing road (first visible 1937)	3, 8, 17, 23-25, 31, 32, 146, 190, 214, 304
	73	1954	Former cleared area (first visible 1944)	19, 27-29
	74	1954	Former cleared area (first visible 1944)	26, 27, 29
	75	1954	Former cleared area (first visible 1944)	29
	76	1954	Former trail (first visible 1937)	4, 9, 30
	77	1954	Former trail (first visible 1937)	4, 9, 30
	78	1954	Cleared area (associated with road shoulder)	142

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	79	1954	Cleared area (associated with road shoulder)	141, 147
	80	1954	Cleared area (associated with road shoulder)	147
	81	1954	QA	
	82	1954	Cleared area (associated with road shoulder)	148
	83	1954	Former area of trails and clearings	39, 56
Yes	84	1954	Trail (extends across area of pre-existing trails and clearings)	38, 56, 138, 139, 152, 153
Yes	85	1954	Trail	152, 153
Yes	86	1954	Trees cleared	None
	87	1954	Former area of trails and clearings	56
	88	1954	Building (incorrectly coded as unidentified object)	156
	89	1954	Building	155
	90	1954	Cleared area (associated with road shoulder)	147
	91	1954	Road	146, 190, 214, 294, 304
	92	1954	Road	146, 190, 214, 304
	93	1954	Pre-existing cleared area (first visible 1944)	45, 167, 202
	94	1954	Pre-existing cleared area (first visible 1944)	46, 166, 168, 203, 295, 296, 297
	95	1954	Cleared area (associated with road construction)	169
Yes	96	1954	Trees cleared	None
Yes	97	1954	Unidentified objects (grouped)	154
	98	1954	Road	146, 176, 190, 214, 256, 258, 259, 261, 267, 304, 320, 330
	99	1954	Road (incorrectly coded as a cleared area)	157
Yes	100	1954	Trees cleared	159, 206, 269
	101	1954	Road (incorrectly coded as a cleared area)	161, 162, 206
Yes	102	1954	Excavation	163, 206, 269, 272-274, 326, 331-333, 338
Yes	103	1954	Excavation	53, 163, 158, 206, 274, 275, 332, 333
	104	1954	Trail (leads to excavation area)	53, 183
	105	1954	Trail (leads to excavation area)	184, 185, 187, 188

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	106	1954	Road	146, 190, 279, 280, 282, 284, 286, 288, 289, 292, 337
	107	1954	Trail (leads to excavation area)	165
	108	1954	Pre-existing trail (first visible 1944)	48, 170
	109	1954	Road (also part of former trail - first visible 1944)	48, 146, 190, 280
	110	1954	Trail (leads to excavation area)	173, 174
	111	1954	Former trail (first visible 1944)	49
	112	1954	Former trail (first visible 1944)	49
Yes	113	1954	Excavation	163, 205, 206, 275
Yes	114	1954	Excavation (former trail - first visible 1944)	49, 163, 206, 275
	115	1954	Former trail (first visible 1944)	49
	116	1954	Road	146, 190, 204, 279, 280, 337
	117	1954	Road	181, 212, 276, 339
	118	1954	Pre-existing trail (first visible 1944)	49, 182
Yes	119	1954	Trees cleared	None
Yes	120	1954	Unidentified objects (grouped)	178
	121	1954	Trees cleared (associated with construction of buildings)	None
	122	1954	Building	180
	123	1954	Building	179
	124	1954	Former area of trails and clearings	56, 145
	125	1954	Former area of trails and clearings	56
	126	1954	Former area of trails and clearings	36
	127	1954	Former area of trails and clearings	37, 38, 56
Yes	128	1954	Trees cleared	None
	129	1954	Road	140, 190, 214, 304
	130	1961	Trail (connects two roads)	191
	131	1961	Pre-existing trail (first visible 1954)	69, 191
Yes	132	1961	Trail	193, 216, 217
Yes	133	1961	Trail	192, 195

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
Yes	134	1961	Trail	196, 197, 218
Yes	135	1961	Scrub cleared	None
Yes	136	1961	Scrub cleared	None
Yes	137	1961	Scrub cleared	None
	138	1961	Former trail (first visible 1954)	84
	139	1961	Former trail (first visible 1954)	84
	140	1961	Pre-existing road (partially visible as trail 1944; first visible as road 1954)	15, 33, 56, 60, 61, 64, 66-68, 129, 190, 214, 304
	141	1961	Former cleared area (first visible 1954)	56, 79
	142	1961	Former cleared area (first visible 1954)	78
	143	1961	Former road (first visible 1954)	68
	144	1961	Road	190, 214, 304
Yes	145	1961	Scrub cleared	124
	146	1961	Pre-existing road (first visible 1937)	3, 8, 17, 23-25, 31, 32, 72, 91, 92, 98, 106, 109, 116, 190, 204, 214, 267, 279, 280, 282, 284, 286, 288, 289, 292, 294, 296, 298, 300, 304, 330, 337
	147	1961	Former cleared area (first visible 1954)	79, 80, 90
	148	1961	Former cleared area (first visible 1954)	82
Yes	149	1961	Trail	199, 200
Yes	150	1961	Trail	198, 199
	151	1961	QA	
	152	1961	Former trail (first visible 1954)	84, 85
	153	1961	Former trail (first visible 1954)	84, 85
	154	1961	Former unidentified objects (first visible 1954); incorrectly coded as forest instead of grass	97
	155	1961	Former building (first visible 1954)	89
	156	1961	Former building (first visible 1954)	88
	157	1961	Pre-existing road (first visible 1954); incorrectly coded as forest	99

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	158	1961	Former excavation (first visible 1954)	53, 103
Yes	159	1961	Excavation	100, 206, 269
Yes	160	1961	Excavation	206, 272, 324, 326, 331
Yes	161	1961	Excavation	101, 206, 272, 324, 325
Yes	162	1961	Excavation	101, 206, 272, 324, 325
	163	1961	Pre-existing excavation (first visible 1954)	53, 102, 103, 113, 114, 205, 206, 269, 273-275, 326, 331-333, 338, 339
	164	1961	Road	190, 280
	165	1961	Former trail (first visible 1954)	107
	166	1961	Former cleared area (first visible 1944)	46, 94
	167	1961	Pre-existing cleared area (first visible 1944)	45, 93, 202
	168	1961	Pre-existing cleared area (first visible 1944)	46, 94, 203, 295
	169	1961	Former cleared area (first visible 1954)	95
	170	1961	Former trail (first visible 1944)	48, 108
	171	1961	Trail (leads to excavation area)	213
Yes	172	1961	Excavation	53, 206, 281
	173	1961	Former trail (first visible 1954)	110, 281
Yes	174	1961	Excavation	110
Yes	175	1961	Excavation	None
	176	1961	Former road (first visible 1954)	98, 190, 214, 256, 259, 261, 267, 304, 320
	177	1961	Road	190, 214, 267, 304
	178	1961	Former unidentified objects (first visible 1954)	120
	179	1961	Former building (first visible 1954)	123
	180	1961	Former building (first visible 1954)	122
	181	1961	Pre-existing road (first visible 1954)	117, 212, 276, 339
	182	1961	Former trail (first visible 1944)	49, 118
	183	1961	Former trail (first visible 1954)	104
	184	1961	Former trail (first visible 1954)	105

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	185	1961	Trail (leads to excavation area; also part of former trail - first visible 1954)	105, 213
	186	1961	Trail (leads to excavation area)	213
	187	1961	Former trail (first visible 1954)	105
	188	1961	Former trail (first visible 1954)	105
	189	1961	Trail (leads to excavation area)	208, 213
	190	1969	Pre-existing road (partially visible 1937, partially visible 1954, partially visible 1961)	3, 8, 15, 17, 23-25, 31-33, 60, 61, 64, 66-68, 72, 91, 92, 98, 106, 109, 116, 129, 140, 144, 146, 164, 176, 177, 204, 214, 256, 259, 261, 267, 279, 280, 282, 284, 286, 288, 289, 292, 294, 298, 300, 304, 320, 337
	191	1969	Former trail (first visible 1961)	69, 130, 131
	192	1969	Former trail (first visible 1961)	133
	193	1969	Pre-existing trail (first visible 1961)	132, 216, 217
Yes	194	1969	Trail	217, 218
	195	1969	Former trail (first visible 1961)	133
	196	1969	Pre-existing trail (first visible 1961)	134, 218
	197	1969	Former trail (first visible 1961)	134
	198	1969	Former trail (first visible 1961)	150
	199	1969	Former trail (first visible 1961)	149, 150
	200	1969	Former trail (first visible 1961)	149
Yes	201	1969	Trail	218-220, 222, 240, 245, 248, 249
	202	1969	Former cleared area (first visible 1944)	45, 93, 167
	203	1969	Pre-existing cleared area (first visible 1944)	46, 94, 168, 295
	204	1969	Former road (first visible 1954)	116, 146, 190
	205	1969	Former excavation (first visible 1954)	113, 163
	206	1969	Pre-existing excavation (first visible 1954)	53, 100-103, 113, 114, 159-163, 172, 269, 272-275, 278, 281, 324-326, 331-333, 338, 339
Yes	207	1969	Excavation	272, 324

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
Yes	208	1969	Excavation	189, 272, 324
Yes	209	1969	Excavation	272, 324
Yes	210	1969	Excavation	272, 324
Yes	211	1969	Excavation	273, 338
	212	1969	Pre-existing road (first visible 1954)	117, 181, 276, 339
	213	1969	Former trail (first visible 1961)	171, 185, 186, 189
	214	1982	Pre-existing road (partially visible 1937, partially visible 1954, partially visible 1961)	3, 8, 15, 17, 23-25, 31-33, 60, 61, 64, 66-68, 72, 91, 92, 98, 129, 140, 144, 146, 176, 177, 190, 304
	215	1982	QA	
	216	1982	Former trail (first visible 1961)	132, 193
	217	1982	Former trail (partially visible 1961, partially visible 1969)	132, 193, 194
	218	1982	Former trail (first visible 1969)	134, 194, 196, 201
	219	1982	Former trail (first visible 1969)	201
	220	1982	Road (intersects former trail - first visible 1969)	201, 304
	221	1982	Road	304
	222	1982	Road (intersects former trail - first visible 1969)	201, 304
	223	1982	Road	304
	224	1982	Road	304
	225	1982	Landscaping	None
	226	1982	QA	
	227	1982	Scrub cleared (associated with construction of community center)	None
	228	1982	Scrub cleared (associated with construction of community center)	None
	229	1982	Road	304
	230	1982	Landscaping	None
	231	1982	Landscaping	307
	232	1982	Landscaping	307
	233	1982	Road	304
	234	1982	Road	304

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	235	1982	Landscaping	306, 307
	236	1982	Landscaping	307
	237	1982	Road	304
	238	1982	Road	304
	239	1982	Road	304
	240	1982	Former road (first visible 1969)	201
	241	1982	QA	
	242	1982	Landscaping (community center)	308
	243	1982	Landscaping (community center)	308
	244	1982	Parking lot (community center)	311
	245	1982	Parking lot (community center)	201, 311
	246	1982	Parking lot (community center)	311
	247	1982	Landscaping (community center)	308
	248	1982	Landscaping (community center)	201, 308
	249	1982	Former trail (first visible 1969)	201
	250	1982	Road	304
	251	1982	Landscaping (community center)	313
	252	1982	Landscaping (community center)	314
	253	1982	Road	304, 322, 323
	254	1982	Landscaping (community center)	315
	255	1982	Landscaping (community center)	315, 316
	256	1982	Landscaping (community center; former road - first visible 1954)	98, 176, 190, 316
	257	1982	Landscaping (community center)	316
	258	1982	Landscaping (community center; former road - first visible 1954; incorrectly coded as road)	98
	259	1982	Landscaping (community center; former road - first visible 1954)	98, 176, 190, 316
	260	1982	Landscaping (community center)	316
	261	1982	Former road (first visible 1954)	98, 176, 190
	262	1982	Recreational building (community center)	310



Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	263	1982	Recreational building (community center)	309
	264	1982	Landscaping (community center)	308
	265	1982	Trees cleared (associated with construction of community center)	None
	266	1982	Industrial building	321
	267	1982	Pre-existing road (partially first visible 1954)	98, 146, 176, 177, 190, 304, 320, 330
	268	1982	Road	304, 318, 320, 327
	269	1982	Former excavation (first visible 1954)	100, 102, 159, 163, 206
	270	1982	QA	
	271	1982	QA	
	272	1982	Pre-existing excavation (first visible 1961)	102, 160, 161, 162, 206, 207, 208, 209, 210, 324, 325
	273	1982	Pre-existing excavation (partially visible 1954, partially visible 1969)	102, 163, 206, 211, 338
	274	1982	Pre-existing excavation (first visible 1954)	53, 102, 103, 163, 206, 326, 331-333
	275	1982	Former excavation (first visible 1954)	103, 113, 114, 163, 206
	276	1982	Pre-existing road (first visible 1954)	117, 181, 212, 304, 339
	277	1982	Road	304, 339
	278	1982	Road	206, 337
	279	1982	Pre-existing road (first visible 1954)	116, 146, 190, 337
	280	1982	Former road (first visible 1954)	106, 116, 109, 146, 190
	281	1982	Former excavation (first visible 1961)	53, 172, 173, 206
	282	1982	Former road (first visible 1954)	106, 146, 190
	283	1982	Road	334, 339
	284	1982	Road (intersects former road - first visible 1954)	106, 146, 190, 339
	285	1982	Road	334, 339
	286	1982	Road (intersects former road - first visible 1954)	106, 146, 190, 339
	287	1982	Road	339
	288	1982	Former road (first visible 1954)	106, 146, 190
	289	1982	Former road (first visible 1954)	106, 146, 190

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	290	1982	Trees cleared (associated with parking lot construction)	None
	291	1982	Parking lot	335
	292	1982	Parking lot (intersects former road - first visible 1954)	106, 146, 190, 335
	293	1982	Parking lot	335
	294	1982	Former road (first visible 1954)	91, 146, 190
	295	1982	Former cleared area (first visible 1944)	46, 94, 168, 203
	296	1982	Road	94, 146, 304
	297	1982	Landscaping	94, 336
	298	1982	Landscaping	146, 190, 336
	299	1982	Landscaping	336
	300	1982	Landscaping	146, 190, 336
	301	1982	Landscaping	336
	302	1982	Road	304
	303	1982	QA	
	304	1994	Pre-existing road (partially visible 1937, partially visible 1954)	3, 8, 15, 17, 23-25, 31-33, 60, 61, 64, 66-68, 72, 91, 92, 98, 129, 140, 144, 146, 176, 177, 190, 214, 220-224, 229, 233, 234, 237-239, 250, 253, 267, 268, 276, 277, 296, 302
Yes	305	1994	Cleared area	None
	306	1994	Former landscaping (first visible 1982)	235
	307	1994	Pre-existing landscaping (first visible 1982)	231, 232, 235, 236
	308	1994	Pre-existing landscaping (first visible 1982)	242, 243, 247, 248, 264
	309	1994	Pre-existing recreational building (first visible 1982)	263
	310	1994	Pre-existing recreational building (first visible 1982)	262
	311	1994	Pre-existing parking lot (first visible 1982)	244-246
	312	1994	Landscaping (community center)	None
	313	1994	Pre-existing landscaping (first visible 1982)	251
	314	1994	Road	252

Of Potential Concern?	Anomaly #	Year of Change	Discussion	Related Anomalies <sup>1</sup>
	315	1994	Road	254, 255
	316	1994	Pre-existing landscaping (first visible 1982)	255-257, 259, 260
	317	1994	Parking lot (incorrectly coded as road)	None
	318	1994	Parking lot (former road - first visible 1982)	268
	319	1994	Parking lot (incorrectly coded as road)	None
	320	1994	Former road (first visible 1954)	98, 176, 190, 267, 268
	321	1994	Pre-existing industrial building (first visible 1982)	266
	322	1994	Former road (first visible 1982)	253
	323	1994	Former road (first visible 1982)	253
	324	1994	Former excavation (first visible 1961)	160-162, 206-210, 272
	325	1994	Former excavation (first visible 1961)	160, 161, 206, 272
	326	1994	Former excavation (first visible 1954)	102, 160, 163, 206, 274
	327	1994	Former road (first visible 1982)	268
	328	1994	Road	None
	329	1994	Landscaping (community center)	None
	330	1994	Pre-existing road (first visible 1954)	98, 146, 190, 267
	331	1994	Former excavation (first visible 1954)	102, 160, 163, 206, 274
	332	1994	Pre-existing excavation (first visible 1954)	53, 102, 103, 163, 206, 274
	333	1994	Former excavation (first visible 1954)	102, 103, 163, 206, 274
	334	1994	Former road (first visible 1982)	283, 285
	335	1994	Pre-existing parking lot (first visible 1982)	291-293
	336	1994	Pre-existing landscaping (first visible 1982)	297-301
	337	1994	Pre-existing road (first visible 1954)	106, 116, 146, 190, 278, 279
	338	1994	Former excavation (first visible 1954)	102, 163, 206, 211, 273
	339	1994	Pre-existing road (first visible 1954)	117, 163, 181, 206, 212, 276, 277, 283-287

<sup>1</sup> Related anomalies refer to anomalies which are carried forward from year to year (e.g., a trail), anomalies which change (e.g., the extension or widening of a trail or cleared area), or occupy the same geographic location in different years.

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Fig. 3a



Fig. 3b





Fig. 3c



Fig. 3d



Fig. 3e



Fig. 3f





Fig. 3g



Fig. 3h



#### **4.4 ANOMALIES OF POTENTIAL CONCERN**

Three hundred thirty anomalies were identified during the photographic interpretation of the Old Chemical Demonstration Area. All anomalies have been resolved except for two groups of unidentified objects. Seventy-three anomalies are considered to be of potential concern. To facilitate anomaly tracking, the anomalies of potential concern were mapped using the anomaly tracking number assigned in the year-by-year analysis (see Table 2 and Fig. 4). Table 2 provides information for each anomaly of potential concern, including the anomaly tracking number, coordinates for the approximate center of the anomaly (coordinates provided in Alabama State Plane East, North American Datum [NAD] 83), the year the change occurred, and the reason for the anomaly.

**Table 2. The Old Chemical Demonstration Area - Anomalies of Concern**

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
1	661190.53437	1164939.75000	1937	This area was cleared before 1937. By 1940, the cleared area had begun to revegetate, except for a trail that transected the area (see anomaly of potential concern 6). The trail is evident in photographs from 1940 through 1944. Remnants of the trail are visible in the 1954 photographs.
2	661271.84976	1164853.35240	1937	This area was cleared prior to 1937. By 1940, revegetation of the area was underway. The area was cleared again between 1940 and 1944 (see anomaly of potential concern 16).
4	660367.21611	1164456.93990	1937	A trail was present in this location in 1937. The trail is evident in photographs through 1944.
5	660773.79303	1163303.27788	1937	This area was cleared before 1937. By 1940, the area was grass-covered. The area contained low ground cover until construction activities occurred between 1969 and 1982.
6	661213.25223	1164966.06250	1940	A trail was constructed in this area between 1937 and 1940. The trail transects a former cleared area (see anomaly of potential concern 1). The trail is evident in photographs from 1940 through 1944. Remnants of the trail are visible in the 1954 photographs.
7	660779.32040	1164695.51820	1940	A trail was present in this location in 1937. By 1940, a large area (which encompassed the trail) was cleared (see anomaly of potential concern 27).
10	660460.17977	1163597.26713	1940	A trail was present in this location in 1940. By 1954, the trail was no longer in use.
11	660445.67506	1163512.79855	1940	A trail was present in this location in 1940. By 1954, the trail was no longer in use.
12	660585.60282	1163593.00104	1940	A trail was present in this location in 1940. By 1954, the trail was no longer in use.
15	661398.90505	1164487.43317	1944	A trail was in use in this location in 1944. The 1944 photographs show potential artillery training (many small, odd-shaped ground scars) in the area west of the end of this trail. The trail was upgraded to a road in 1954.
16	661205.78101	1164812.69471	1944	The cleared area was cleared prior to 1937. The area was also cleared between 1940 and 1944. (see anomaly of potential concern 2). By 1954, the area was grass-covered.
20	660784.43971	1164747.61644	1944	This area was cleared between 1940 and 1944. By 1954, vegetation regrowth was underway. Vegetation growth continued and by 1982, the area was reforested.
21	660842.12466	1164696.85368	1944	This area was cleared between 1940 and 1944. By 1954, vegetation regrowth was underway. Between 1954 and 1961, the vegetation was cleared from this area for a road right of way. From 1961 through 1994, the area was maintained as a right of way.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
22	660842.12466	1164719.92766	1944	This area was cleared between 1940 and 1944. In 1940, the area served as a trail. By 1954, vegetation regrowth was underway. Between 1954 and 1961, the vegetation was cleared from this area for a road right of way. From 1961 through 1994, the area was maintained as a right of way.
26	660733.67694	1164701.46847	1944	This area was cleared between 1940 and 1944. By 1954, vegetation regrowth was underway. Vegetation growth continued and by 1982, the area was reforested.
27	660740.59914	1164653.01311	1944	This area was cleared between 1940 and 1944. In 1940, a trail was evident in this location. By 1954, vegetation regrowth was underway. Vegetation growth continued and by 1982, the area was reforested.
28	660784.43971	1164671.47229	1944	This area was cleared between 1940 and 1944. The area was maintained as a road right of way through 1994.
29	660539.85549	1164583.79116	1944	This large area was cleared between 1940 and 1944. By 1954, vegetation regrowth was underway. Vegetation growth continued and in 1969, the northern portion of the area was reforested. The southern portion of the area served as a road right of way.
33	661619.71787	1163884.64950	1944	A trail was in use in this location in 1944. The 1944 photographs show potential artillery training (many small, odd-shaped ground scars) in the area east of the end of this trail (see anomaly of potential concern 34). The trail was upgraded to a road in 1954.
34	661612.79567	1164025.40079	1944	Trees were cleared in this area between 1940 and 1944. The 1944 photographs show many small, odd-shaped ground scars in this area that may be related to artillery training. By 1954, vegetation regrowth was underway and by 1961, the area had become reforested.
35	661594.33648	1164355.35874	1944	Trees were cleared in this area between 1940 and 1944. The 1944 photographs show a few small, odd-shaped ground scars in this area that may be related to artillery training. By 1954, the area had become reforested.
36	661388.97804	1163679.29106	1944	In 1944, this area contained trails and clearings. By 1954, vegetation regrowth was underway.
37	661402.66948	1163552.89837	1944	In 1944, this area contained trails and clearings. By 1954, vegetation regrowth was underway. Between 1969 and 1982, this area was cleared during construction activities.
38	661262.07114	1163469.31782	1944	In 1944, this area contained trails and clearings. In 1954, the eastern half of this area had become reforested and a trail transected the western half of the area (see anomaly of potential concern 84).
39	661197.46399	1163291.64815	1944	In 1944, this area contained trails and clearings. The vegetation in this area remained grass or low ground cover through 1969. Construction activities began in this area between 1969 and 1982.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
46	660371.41542	1162694.03201	1944	This area was cleared prior to the acquisition of the 1944 photographs. The area remained clear through 1969. By 1982, vegetation covered the area.
47	660320.65266	1162571.73990	1944	All of the trees were cleared from this area between 1940 and 1944. Vegetation regrowth was underway in 1954.
48	660579.08126	1162604.04348	1944	A new trail was present in this location in 1944. The trail was widened prior to 1954. By 1961, this trail was no longer in use.
49	661112.09025	1162486.36617	1944	A new trail was present in this location in 1944 (extension of trail identified as anomaly of potential concern 48). This trail led to two cleared areas that were located outside the study area. The eastern leg of the trail remained in use in 1954, while the rest of trail was no longer used. By 1961, the western portion of the trail had begun to revegetate.
50	661273.60813	1162368.68886	1944	Most of the trees were cleared in this area between 1940 and 1944. By 1954, vegetation regrowth was underway. The area had become reforested by 1969.
51	661257.45634	1162234.85976	1944	Most of the trees were cleared in this area between 1940 and 1944. By 1954, vegetation regrowth was underway. The area had become reforested by 1969.
52	661008.25733	1162370.99626	1944	Most of the trees were cleared in this area between 1940 and 1944. By 1954, vegetation regrowth was underway. The area had become reforested by 1969.
53	660860.58385	1162553.28072	1944	Trees were cleared in this area between 1940 and 1944. By 1954, this area had been excavated. The excavation area grew in size through 1969. The area remained active through 1994.
54	660715.21776	1162251.01155	1944	Most of the trees were cleared in this area between 1940 and 1944. In 1954, most of this area remained clear. By 1961, vegetation regrowth was underway. In 1969, a new road transected the area but the remaining acreage had become reforested.
55	661218.68201	1163340.41712	1944	In 1944, this small area contained trails and clearings. The vegetation in this area remained grass or low ground cover through 1994.
56	660911.01274	1163847.07452	1944	This area endured heavy disturbance between 1940 and 1944. The area is filled with trails and areas of scarred ground. By 1954, the activity that caused the disturbance in the area appears to have been halted, although much of the ground remained scarred. In 1961, the area remained clear and still contained scarred ground. By 1969, grass-covered most of the area and by 1982, vegetation regrowth was underway. By 1994, the area had become reforested.
63	661435.38568	1164721.68603	1954	The vegetation (scrub/shrub) was cleared in this area between 1944 and 1954. Vegetation regrowth was underway by 1961.
84	661164.87106	1163698.55152	1954	A trail was present in this location in 1954. In 1944, this area was heavily disturbed. By 1961, the trail was no longer in use.



Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
85	661363.06989	1163197.69772	1954	A trail was present in this location in 1954. By 1961, the trail was no longer in use.
86	661233.16902	1163196.93239	1954	All of the trees were cleared in this area prior to 1954. The area remained clear through 1969. In 1982, this area was under construction.
96	660275.65469	1162437.04275	1954	Many of the trees were cleared from this area between 1944 and 1954. Vegetation regrowth began between 1954 and 1961. By 1994, the area had become reforested.
97	661764.82428	1163122.70357	1954	Groups of unidentified objects were present at this location in 1954. In 1961, the objects were no longer present.
100	660838.11083	1162747.73281	1954	All of the trees were cleared in this area before 1954. By 1961, this area was part of the large excavation area (same location as anomaly of potential concern 159).
102	660977.38568	1162648.63339	1954	A large excavation activity was underway at this location in 1954. The area remained active through 1994.
103	660902.39153	1162536.14217	1954	A large excavation activity was underway at this location in 1954. The area remained active through 1994.
113	660868.59724	1162437.87949	1954	A large excavation activity was underway at this location in 1954. This portion of the excavation area was reduced in size over time. By 1982, this area was grass-covered.
114	660876.01064	1162474.94647	1954	A large excavation activity was underway at this location in 1954. This portion of the excavation area was reduced in size over time. By 1982, this area was grass-covered.
119	661509.85589	1162206.82869	1954	Trees were cleared in this area between 1944 and 1954. This area is related to a disturbed area that is located outside of the study area. Vegetation regrowth was underway in 1969 and by 1994, the area had become reforested.
120	661982.61822	1162720.72939	1954	Groups of unidentified objects were present at this location in 1954. In 1961, the objects were no longer present.
128	661319.08826	1163946.89437	1954	Trees were cleared in this area prior to 1954. The area remained clear in 1961. By 1969, vegetation regrowth was underway and by 1982, the area had become reforested.
132	660843.32659	1164342.31192	1961	A new trail was present in this location in 1961. The trail remained in use through 1969. The trail is not evident in the 1982 photographs.
133	660980.34598	1164053.85005	1961	A new trail was present in this location in 1961. By 1969, the trail had been redirected away from this location. Anomaly of potential concern 194 contains the redirected trail.
134	661059.67299	1163760.58047	1961	A new trail was present in this location in 1961. The trail remained in use through 1969. The trail is not evident in the 1982 photographs.
135	661059.67299	1164272.60030	1961	Scrub was cleared from this area between 1954 and 1961. By 1969, the area had begun to revegetate and by 1982, the area had become reforested.
136	660989.96137	1163998.56152	1961	Scrub was cleared from this area between 1954 and 1961. By 1969, the area had begun to revegetate and by 1982, the area had become reforested.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
137	661182.26929	1163791.83051	1961	Scrub was cleared from this area between 1954 and 1961. By 1969, the area had begun to revegetate and by 1982, the area had become reforested.
145	660574.09550	1163916.83065	1961	Scrub was cleared in this area between 1954 and 1961. The area remained clear (grass-covered) in 1969. By 1982, vegetation regrowth was underway and by 1994, the area had become reforested.
149	660807.26885	1163484.13784	1961	A new trail was evident in this location in 1961. By 1969, the trail was no longer evident.
150	660648.61482	1163549.04176	1961	A new trail was evident in this location in 1961. By 1969, the trail was no longer evident.
159	660848.13428	1162748.56006	1961	This area was excavated between 1954 and 1961. Trees had been cleared from the area previously. The excavation activities at this location were ongoing in 1969, but had ceased by 1982.
160	661050.05760	1162753.36776	1961	This area was excavated between 1954 and 1961. The excavation activities at this location were ongoing through 1982 but had ceased by 1994.
161	661134.19231	1162688.46384	1961	This area was excavated between 1954 and 1961. The excavation activities at this location were ongoing through 1982 but had ceased by 1994.
162	661182.26929	1162676.44459	1961	This area was excavated between 1954 and 1961. The excavation activities at this location were ongoing through 1982 but had ceased by 1994.
172	660788.03806	1162570.67524	1961	This area was excavated between 1954 and 1961. By 1969, the excavation activities at this location had ceased.
174	660800.95217	1162533.14361	1961	This area was excavated between 1954 and 1961. By 1969, the excavation activities at this location had ceased.
175	660809.65515	1162519.00126	1961	This area was excavated between 1954 and 1961. By 1969, the excavation activities at this location had ceased.
194	660947.41176	1164033.66588	1969	A trail was present in this location in 1969. The trail was in use through 1982; by 1994, the trail was no longer evident.
201	661129.08042	1163533.48723	1969	A trail was present in this location in 1969. By 1982, the trail was no longer evident.
207	660956.84909	1162790.29726	1969	This area was excavated between 1961 and 1969. The excavation activities were ongoing in 1982 but had ceased in this location by 1994.
208	661004.03576	1162802.09392	1969	This area was excavated between 1961 and 1969. The excavation activities were ongoing in 1982 but had ceased in this location by 1994.
209	661027.62909	1162802.09392	1969	This area was excavated between 1961 and 1969. The excavation activities were ongoing in 1982 but had ceased in this location by 1994.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
210	661173.90775	1162721.87659	1969	This area was excavated between 1961 and 1969. The excavation activities were ongoing in 1982 but had ceased in this location by 1994.
211	661152.67375	1162570.87927	1969	This area was excavated between 1961 and 1969. The excavation activities were ongoing in 1982 but had ceased in this location by 1994.
305	660707.72428	1164711.05048	1994	This area was cleared between 1982 and 1994.

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Fig 4